SYNTAX

SERVING TIMEX-SINCLAIR PERSONAL COMPUTERS

A PUBLICATION OF THE HARVARD GROUP

ZIFF-DAVIS LOSES SYNC--PICTURE UNCLEAR

SYNC magazine, first announced in SYNTAX's 2d issue, ceased publishing with the March/April 1984 issue. Founded by David Ahl, SYNC built on the resources of its sister publications & became a fast-growing, friendly competitor to SYNTAX. In fact, SYNC advertised in SYNTAX, Dec.81, & SYNTAX had also advertised in SYNC, but after Ziff-Davis purchased SYNC, we could no longer advertise in SYNC, and ultimately in any Ziff computer group publication.

SYNC grew rapidly in circulation and ad pages, becoming the volume leader of ZX/TS support publications. At its death, SYNC was serving nearly 40,000 subscribers. Defiant to the last, Ziff-Davis officials failed to return our phone calls--we've no idea what they will offer you.

Separately, Ziff-Davis informed a major mailing list broker that the SYNC magazine subscriber names will not be available for purchase or rental as a separate list. Ziff-Davis will combine the lists with those of their other publications.

TIMEX TO OFFER TS2068 TECHNICAL INFORMATION

Doug Smith of Timex informs SYNTAX that the information in Timex Technical Memos 1-9 and the 3rd Party Software Guide will be amended corrected and then distributed through their Little Rock, AK service facility. The packet will be available (beginning in May) for an undetermined fee. No nondisclosure agreement will be required.

TS2068 schematics can be obtained now for $2.50 by writing the Little Rock repair facility at:

Timex Computer Corporation
Little Rock Product Service Center
Little Rock, AK 72203

No nondisclosure agreement required for this.

SYNTAX ERRORS: Program 1 in Recipes for 2068 Advanced Video, Feb.84, must be RUN twice right after loading from tape and gives a false error the first time.

In New Products and Services, Feb.84, Andropos Technology's name is actually Apropros Technology.

PROGRAM IMPROVEMENTS

In Reusable Loops, Jan.84, you ask for a memory efficient way to test a variable for "none of the above." Replace line 5 with:

```
5 GOTO 3+3*((K$="P")+(K$="S")
+(K$="O")+(K$="I")+(K$="A")
```

The program will only GOTO line 6 if one of the relations in brackets holds true, otherwise it goes to 3.

R. F. Fraser-Smith, Chicago, IL

VENDOR REPORT

Timex will not produce the 2060 Interface, 2065 Microdrive, or 2080 Printer (announced in SYNTAX Jan.84). The 2050 Modem has been sold in some places but may have a heat sensitivity problem. 2020 Cassette Decks are available but offer no benefit over any good cassette deck and may have some design problems.

Hawg Wild Software intends to continue supporting the ZX/TS.

Marge Saylor of Compusa verified that they have a 35% charge for restocking unauthorized returns. Authorized returns that work according to their claims are charged 10-20%. Authorized returns that do not work have no restocking charge. This policy does not appear in their ads.

Thomas B. Woods plans to continue developing software for the ZX/TS and TS2068. See his announcement on page 3.

Simulsion (formerly Lamo-Lem Labs) has a new address: Box 2382, La Jolla, CA 92038. Their phone number is still 619/263-6591.

Quicksilva Inc. (426 West Nakoma, San Antonio, TX 78216, 512/340-3684) still has software available for the ZX/TS and games for the TS2068. They plan to market a software line for the QL including educational programs, utilities, and games.

ZX/TS USERS' GROUPS

To check for a local group that's not listed, or to announce a new group, call 617/456-3661 or write SYNTAX, RD 2 Box 457, Bolton Rd., Harvard, MA 01451. Send SASE for name of group in your area.

Andover, KS: Air Capital Users Group, c/o Randy Cummings, 124 W. 10th St., Andover, KS 67002, 316/733-0242.

Louisville, KY: Bruce S. Chang, 6 Rio Vista Dr., Louisville, KY 40207, 502/458-6163.

Matawan, NJ: Aerco Disc Nationwide Users Group, c/o Burke Mawby, POB 49, Matawan, NJ 07747, 201/566-7445 (bus), 201/583-4675 (res).

Amarillo, TX: New group forming, contact Joe E. Jenkins, 3100 Mockingbird, Amarillo, TX 79109, 806/355-3185.

HARDWARE HINT--ZX-99

A 10 Ohm, 1/4 Watt resistor in series with the hot lead of the ZX-99 Tape Controller remote line may prevent the internal relay from sticking closed.

If you want to add this resistor without opening up your ZX-99, it can be fit inside the remote plug to the cassette deck.

Jay Siegel, Brooklyn, NY

NEW PRODUCTS AND SERVICES

PRO/FILE 2068 stores your database of up to 28,000 characters organized into files ("screens") and allows fast searching, user formatted printing, screen editing, and alphabetized file index. Available now, full documentation to come later, $29.95 cassette from Thomas B. Woods, POB 64, Jefferson, NH 03583, 603/586-7734.

ROMPAK now offers 5 ROMs for their $16.95 ROM cartridge board (see review SYNTAX Jan.84): ZX PRO/FILE, Thomas Woods database program for ZX/TS ($24.95), TEXTWRITER word processor ($24.95), QUICKLOAD, LOADs and SAVEs 16K in 30 seconds ($17.95 sep., included in PRO/FILE and TEXTWRITER ROMs), VIRTUOSO music program ($15.95), and GRAPHIX PAK utility routines ($16.95). Plans for 2716, 32, 64 EPROM programmer $15. ROMPAK Inc., Suite 100, 8206 Blackburn Ave., Los Angeles, CA 90048, 213/653-9741.

CLS (POB 104, Cochituate, MA 01778) publishes a telephone directory of toll-free 800 numbers for leading high-tech computer firms ($3 PPD).

JRC SOFTWARE (POB 448, Scottsburg, IN 47170 812/752-6071, -5106) offers the TS1000 Incredible Super Tape ($24.95 + $.37 SASE) with over 20 programs, most in MC. Includes sound effects, system programs, an oscilloscope program, tape unlock, assembler, text editor, etc. Similar package for TS2068s also available, including Hi-Res Lander, Oscilloscope, and The Great Graphics Show. All with a 10-day unconditional money-back guarantee.

Games to Learn By (POB 575, Williamsburg, MA 01096 413/268-7505) offers 3 new TS2068 games: DeathChase (3-D motorcycle chase) for $19.95, Mystery Manor (graphic adventure) for $15.95, and Art for All Ages (2068 canvas) for $15.95.

Fidelity Brokerage Services (82 Devonshire St., Boston, MA 02109 800/343-8722) announces the first national home brokerage trading service, allowing subscribers to enter buy and sell orders on listed and OTC stocks and options 24 hours a day. Any terminal or computer with a modem may be used (MD-2 and ZX/TS or MD-68 and TS2068, for instance). Access is via TELENET. Available for a one-time subscription charge of $195, plus $.40/min. (business hours) or $.10/min (non-business hours).

WHEN YOU ORDER...

Please mention that you saw it in SYNTAX. We can't grow unless advertisers know you read us.

SOFTWARE HINT--TS2068

To put the TS2068 (or ZX Spectrum) in caps mode (C cursor) from within a program, use: POKE 23658,8. Reset with POKE 23658,0.

Randy Cummings, Andover, KS

HARDWARE HINT--TS2068

To use the ZX printer with the 2068, wire a 9VDC power supply to the printer (do not connect to edge connector).

HARDWARE HINT--TS2040

Your TS2040 Printer can use the thermal paper sold by Radio Shack for use with their 40 column Color Computer printer.

AVAILABLE FROM SYNTAX...

If you get **The Works** before Apr.15, you can select, absolutely **FREE**, any three products (including a 16K RAMpak, The ZX81/TS1000 Home Computer Book, VU-CALC, Frogger, and many other Timex software titles) from the list on the back cover of SYNTAX, February 84.

ZX/TS RELATED BOOKS IN PRINT AVAILABLE IN THE UNITED STATES
* Review appeared in SYNTAX (consult our Dec.83 Index)
+ Future title still scheduled for publication
- Out of stock but not out of print

McGraw-Hill Books, 1221 Ave. Americas, New York, NY 10020 212/512-2000
0-07-001698-4	An Introduction to Vu-Calc Spreadsheeting for the Timex-Sinclair 2000 & the Sinclair ZX Spectrum
0-07-001699-2	An Introduction to Visicalc Spreadsheeting on the ZX-81 & Timex-Sinclair 1000
*0-07-010831-5	Crunchers: 21 Games for the Timex Sinclair 1000 (2K)
0-07-022677-6	Gosubs: 100 Program-Building Subroutines in Timex-Sinclair BASIC
0-07-023959-2	Bogglers: 22 Smart Games (2k to 16k) in Timex-Sinclair BASIC
0-07-031449-7	ZX81-TS1000 Programming for Young Programmers
0-07-037444-9	Science & Engineering Programs for the Timex-Sinclair 1000: Professional Programs for the Timex Sinclair
0-07-044041-7	BASICS: A Guide to the Timex-Sinclair 1000 (2K)

Osborne McGraw-Hill, 2600 10th St., Berkely, CA 94710 800/227-2895
0-88134-106-1	ZX81, TS1000 Home Computer Book

Prentice-Hall, Inc., Englewood Cliffs, NJ 07632 201/592-2000
0-13-037318-4	Animation, Games, & Graphics for the Timex 1000
+0-13-081050-9	Brain Ticklers: Timex Sinclair 1000 Version
0-13-081000-2	
0-13-164278-2	Computer Graphics for the TIMEX 1000 & Sinclair ZX-81
+0-13-477430-2	Introducing Timex-Sinclair 2000 Machine Code: How to Get
+0-13-477422-1	More Speed & Power
+0-13-561853-3	Mathematical Problem-Solving with the Microcomputer: Timex Sinclair 1000 Version
+0-13-729582-0	Programming the Timex-Sinclair 2000
+0-13-729574-X	
0-13-729673-8	Programming Projects for Your Timex-Sinclair 1000
0-13-729798-X	Programs for Your Timex-Sinclair 1000
0-13-729780-7	
0-13-729871-4	Programming Your Timex-Sinclair 1000 in BASIC
0-13-729863-3	
0-13-918904-1	Thirty Games for the Timex-Sinclair 1000
0-13-918896-7	
0-13-921759-2	Timex-Sinclair Interfacing: Tested Interfacing Projects
0-13-921742-8	for the ZX80, ZX81 & the Timex-Sinclair 1000
+0-13-921767-3	The Timex-Sinclair 2000 & How to Get the Most From It
+0-13-921791-6	Timex-Sinclair 2000 Book of Games
+0-13-921783-5	
+0-13-921974-9	The Timex TS 2000: Your Personal Computer

Addison-Wesley Publishing Co., Jacob Way, Reading, MA 01867 617/944-3700
0-201-11064-4	Seventy Games for the Timex-Sinclair 1000
0-201-16479-5	Tantalizing Games for the Timex Sinclair 2000
+0-201-14649-5	An Explorer's Guide to the Timex-Sinclair 1000 & the Timex-Sinclair 2000

Focal Press, 80 Montvale Ave., Stoneham, MA 02180 617/438-8464
0-408-01101-7	Learning BASIC with your Sinclair ZX80
0-408-01323-0	ZX Spectrum User's Handbook
0-408-01338-9	Introducing ZX80 Assembly Language Programming

Bantam Books Inc., 666 5th Ave., New York, NY 10103 212/765-3535
*0-553-23241-X	Mastering Your Timex-Sinclair 1000 Personal Computer

Dell Publ., 1 Dag Hammarskjold Plaza, New York, NY 10017 212/605-3000
  0-440-52785-6 Games for Your Timex-Sinclair 1000
  0-440-52794-5 Games for Your Timex-Sinclair 2000
New American Library, 1633 Broadway, New York, NY 10019 212/397-8000
  *0-451-12138-4 The Timex Personal Computer Made Simple
  0-451-12598-3 51 Game Programs for the Timex Sinclair 1000 & 1500
John Wiley & Sons, Inc., 605 3rd Ave., New York, NY 10158 212/850-6000
  0-471-88730-7 What Can I Do with My Timex Sinclair 1000? Lots!: 56
  0-471-88729-3   Programs for the Timex Sinclair 1000 & ZX81
  0-471-89099-5 The Timex Sinclair 2000 Series Explored
  *0-471-89888-0 Byteing Deeper in Your Timex Sinclair 1000
Howard W. Sams, 4300 W. 62nd St., Indianapolis, IN 46268 317/298-5400
  *0-672-21957-3 ZX-81 BASIC Book
  0-672-22012-1 Timex-Sinclair 1000/ZX81 User's Handbook
  0-672-22077-6 Timex-Sinclair BASIC Primer With Graphics
  0-672-22225-6 Timex-Sinclair 2068 Beginner/Intermediate Guide
Birkhauser Books, 380 Green St., Cambridge, MA 02139 617/576-6637
  3-7643-3080-5 Timex Sinclair One-Thousand: Programs, Games, & Graphics
  3-7643-3115-1 Machine Code & Better BASIC: For the Timex Sinclair
                 1000 & 2000
Hayden Book Co., 50 Essex St., Rochelle Park, NJ 07662 201/393-6000
  0-8104-2102-4 Timex-Sinclair BASIC
  0-8104-1064-8 Timex-Sinclair Color Graphics
Tab Books Inc., Blue Ridge Summit, PA 17214 717/794-2191
  0-8306-0108-2 A Kid's Manual for Programming the Sinclair-Timex
  0-8306-0608-4   Computers
  0-8306-0117-1 Using & Programming the ZX81-TS1000, Including Ready-to-
  0-8306-0617-3   Run Programs
  0-8306-0523-1 The Sinclair ZX81
  +0-8306-0708-0 A Kid's First Book to the Timex Sinclair 2068
  +0-8306-1708-6
  0-8306-1623-3 Computer Companion for the Timex-Sinclair Computers
Reston Publ. Co., 11480 Sunset Hills Rd., Reston, VA 22090 703/437-8900
  0-8359-0348-6 BASIC Basics for the Timex Sinclair 1500
  *0-8359-4255-4 Mastering Machine Code on Your Timex Sinclair 1500
  +0-8359-7699-8 Timex Sinclair 2068, 1500, and 1000 Machine Language
                 Programming and Interfacing
Melbourne House, 333 E. 46st St., New York, NY 10017 212/490-7957
  *0-86161-101-2 Machine Language Programming Made Simple for the Sinclair
  0-86161-103-9 Understanding Your ZX81 Rom
  *0-86161-113-6 The Complete Sinclair ZX81 ROM Disassembly
  0-86161-102-0 Not Only 30 Programs for the ZX81
  0-86161-118-7 The Ins & Outs of the TS1000/ZX81
  0-86161-105-5 The Complete ZX81/TS1000 BASIC Course
ARCsoft Publishers, POB 132, Woodsboro, MD 21798 301/845-8856
  0-86668-020-9 One Hundred & One Timex 1000-Sinclair ZX-81 Programming
                 Tips & Tricks
  0-86668-021-7 Thirty Seven Timex 1000-Sinclair ZX-81 Computer Programs
                 for Home, School & Office
  0-86668-026-8 Timex-Sinclair Computer Games Programs
  0-86668-027-6 Practical Timex-Sinclair Computer Programs for Beginners
  0-86668-810-2 Timex-Sinclair Computer Program Writing Workbook
Wayne Green Inc., Rt. 101 & Elm St., Peterboro, NH 03458 800/343-0728
  0-88006-063-8 Converting to Timex-Sinclair BASIC
  0-88006-065-4 Using the Timex-Sinclair 1000 & 1500

Simon & Schuster, 1230 Ave. Americas; New York, NY 10020 212/245-6400
0-671-47069-8   The Essential Guide to Timex/Sinclair Home Computers
Que Corporation, 7960 Castleway Dr., Indianapolis, IN 46250 317/842-7162
-0-88022-016-3   The Timex-Sinclair User's Guide, Vol. 1
0-88022-028-7   Timex-Sinclair 1000 Pocket Dictionary
-0-88022-029-5   Timex-Sinclair User's Guide, Vol. 2
0-88022-030-9   Timelost: Timex-Sinclair 1000 Version
Datamost Inc., 8943 Fullbright Ave., Chatsworth, CA 91311 818/709-1202
0-88190-058-3   The Elementary Timex-Sinclair
Dilithium Press, 11000 SW 11th St., Beaverton, OR 97005 800/547-1842
0-88056-090-8   The Sinclair ZX81 Book-Software Package: Programming for
                Real Applications, Also for the Timex Sinclair 1000
0-88056-107-6   Using & Programming the Timex Sinclair Computer
0-88056-113-0   How to Use the Timex-Sinclair Computer
0-88056-127-0   Control Things with Your Timex-Sinclair
0-88056-137-8   Thirty-Two BASIC Programs for the Timex-Sinclair Computer
0-88056-189-0
*0-88056-155-6   The Sinclair ZX-81: Programming for Real Applications,
                Also for the Timex Sinclair 1000
R.J. Brady Publishing, Rts. 197 & 450, Bowie, MD 20715 301/262-6300
0-89303-348-0   Brain Games for Kids & Adults Using the Timex-Sinclair
                1000, 1500 & 2000 Series
+0-89303-874-1   Teach Yourself BASIC with the Timex-Sinclair Computer: A
                Beginner's Guide
0-89303-941-1   VU-CALC & VU-FILE (The Organizer): Getting Serious with
                Your Timex-Sinclair
Sybex Inc., 2344 Sixth Street, Berkeley, CA 94710 415/848-8233
*0-89588-099-7   Your Timex Sinclair 1000 and ZX81
Trillium Books, POB 921, Madison Sq., New York, NY 10159 212/684-7399
0-89824-058-1   Kids Working with Computers: Timex Sinclair BASIC Manual
Book Co., 11223 South Hindry Ave., Los Angeles, CA 90045 213/410-9466
0-912003-16-2   The Timex-Sinclair User's Encyclopedia
Cibbarelli, 11684 Ventura Blvd., Studio City, CA 91604 818/797-7654
0-913203-02-5   Introduction to Computer Programming for
0-913203-01-7   Information Services
Creative Comp., 39 E. Hanover Ave., Morris Plains, NJ 07950 201/540-0445
0-916688-23-2   Fifty Programs for the Timex-Sinclair 1000
*0-916688-26-7   The ZX-81 Companion
*0-916688-33-X   Getting Acquainted with Your ZX-81
0-916688-41-0   The Gateway Guide to the ZX-81 & ZX-80
0-916688-43-7   The Best of SYNC
0-916688-48-8   The Timex-Sinclair 1000 Idea Book
+0-916688-66-6   The Working Timex-Sinclair 2068
Compusoft Publishing, 535 Broadway, El Cajon, CA 92021 619/588-0996
*0-932760-15-5   Learning Timex Sinclair BASIC for the Timex 1000 & the
                Sinclair ZX81
K.D.V.H.E. Publishers, POB 6788, Chicago, IL 60680 312/791-9065
0-932810-00-4   Timex Sinclair Statistics: 12 16K Programs
                Including Multifactor Analysis of Variance
0-932810-01-2   Timex Sinclair Statistics: 12 16K Programs
0-932810-02-0   For the ZX81, TS1000, TS1500, Including
0-932810-03-9   Multifactor Analysis of Variance (3 editions:
                Data in REM, Data in Strings, and Data in Array)
Computer Engineering Services, POB 1222, Show Low, AZ 85901 No Phone
*None   The Expandable ZX80 and ZX81

DEAR EDITOR:

I could not believe the pullout of Timex until I read it in SYNTAX! It breaks my heart to see a superior product like the 2068 left an orphan. However, it was heartening to read your page 10 statement of intent. I whole-heartedly support your stand and will do all I can to support your publication.

I have always mentioned your name when I bought a product advertised in SYNTAX and there have been many occasions.

Looking forward to all future issues, I am yours truly,

Virginia T. Lake, Wilmington, DE

Is there any additional documentation available for the Timex Vu-Calc program? There must be a better description than the one that comes with the tape.

Don Durst, Kettering, OH

Our list of ZX/TS Books in Print (this issue) lists two books about Vu-Calc, ISBN 0-07-001698-4 for the TS2000 (presumably meaning 2068) and ISBN 0-89303-941-1 for ZX/TS.

I am trying to get a copy of the UK manual for the ZX Spectrum. The abbreviated 2068 manual does not cover the computer sufficiently and it may be doomsday before the Timex people come out with their own advanced manual. Of course, I am willing to buy the book if I knew where to get it.

Warren Fricke, Depew, NY

Sinclair's U.S. office cannot obtain Spectrum manuals for Timex customers since they do not support the TS2068. Timex will not publish the Advanced Programming Manual, however, they will make available technical information for the 2068 starting in May. Schematics are available now. See story, page 1.

After successfully using the old Sinclair ZX Printer for over a year, it finally gave out on me, and I decided to invest in the new Timex-Sinclair 2040 Printer.

I am very disappointed in the product, specifically because the print is too light. Does anyone know of a way to improve the printing quality of the TS2040, so that it prints a darker, heavier image, at least as readable as the old ZX printer?

Two separate phone calls to Timex have produced nothing but a "ho-hum" attitude. They don't seem to know anything about printing quality, and can't even tell me where I can buy replacement paper.

Dan R. Sullivan, Seattle, WA

TS2040s print darker on Radio Shack 40 column thermal paper. We use it at SYNTAX for all our listings.

I was shocked, as I'm sure many were, by the news that Timex was getting out of the computer business. And I'm worried about the alarming decrease in the SYNTAX's size and ad volume. I almost feel I am the proud (?) owner of an unwanted orphan. Has my 16K ZX81 hit a dead end?

I hope not. The Timex Sinclair line remains an excellent value. The departure of Timex has created an opportunity for smaller, low-overhead operations to step in and fill the need for continued support of the T/S line.

SYNTAX can play a badly needed role. People need to know what's happening. Who is selling, supporting, or developing what? Where can I get supplies and parts? What's happening in the U.K.?

SYNTAX may be the only channel for distributing news and information to the T/S user community. It would be, in effect, the organ for a nation-wide user's group!

Stephen Greene, N. Reading, MA

LOOK ANGLES--8K/16K

Given the latitude, longitude, and local magnetic variation of a dish antenna and the longitude of a geostationary satellite, this program calculates the look angles (azimuth, elevation, and heading) for recieving signals.

Because the ZX/TS computes trig functions only in radians, LOOK ANGLES converts all input into radians and all output back into degrees.

This program runs on the 2068 without any changes after FIRST-LOADing. Adapted from a program published in ELECTRONICS, 8/25/82.

Lawrence D. Terry, Naples, FL

```
    5 REM PROGRAM TITLE "LOOK ANG
LES"
   10 REM - THIS PROGRAM COMPUTES
 ELEVATION ANGLE, AZIMUTH, AND C
OMPASS HEADING TO SYNCHRONOUS OR
 BITING SATELITES.
   20 PRINT "ENTER LATITUDE, LONG
ITUDE, AND  VARIATION IN DEGREES
 AND         HUNDREDTHS OF DEGREE
S."
   30 PRINT
   40 PRINT "MY LATITUDE IS ";
   50 INPUT B
   60 PRINT B
   65 PRINT
   70 PRINT "MY LONGITUDE IS ";
   80 INPUT C
   90 PRINT C
   95 PRINT
  100 PRINT "THE MAGNETIC VARIATI
ON AT MY      LOCATION IS ";
  110 INPUT M
  120 PRINT M
  125 PRINT
  130 PRINT "THE SATELLITE LONGIT
UDE IS ";
  140 INPUT S
  150 PRINT S
  155 PRINT
  160 REM -Y IS SAT ALT IN KMS
  170 REM - R IS EARTH RADIUS IN
KMS
  180 LET R=6370
  190 LET Y=35800
  200 LET G=S-C
  210 REM LINES 220 AND 230 CONVE
RT DEGREES TO RADIANS.
  220 LET G=PI*G/180
  230 LET L=PI*B/180
  240 LET Q=(COS G)*(COS L)
  250 IF ABS (Q)=1 THEN LET E=90*
Q
  260 IF ABS (Q)=1 THEN GOTO 300
  270 LET E=ATN ((Q-R/(Y+R))/SQR
(1-Q**2))
  280 LET E=E+180/PI
```

```
  290 REM  LINE 280 CONVERTS RADI
ANS TO DEGREES.
  300 IF E<0 THEN GOTO 460
  310 IF (SIN L)<>0 THEN GOTO 340
  320 LET A=90*SGN (SIN G)+180
  330 GOTO 390
  340 LET A=ATN (TAN G/SIN L)
  350 LET A=(A*180/PI)+180
  360 IF (SIN L)>0 THEN GOTO 400
  370 LET A=A-180
  380 IF (SIN G)>0 THEN GOTO 450
  390 LET A=A+360
  400 LET H=A+M
  410 LET H=H-360*INT (H/360)
  420 PRINT "AZIMUTH IS ";A
  425 PRINT
  430 PRINT "ELEVATION IS ";E
  435 PRINT
  440 PRINT "HEADING IS ";H
  445 PRINT
  450 GOTO 130
  460 LET D=-E
  470 PRINT "ELEVATION IS BELOW H
ORIZON BY ";D,"DEGREES."
  475 PRINT
  480 GOTO 130
SYNTACTIC SUM:  5865, 8K ROM
```

ASTEROIDS--8K/16K

Here's a fast game written in machine code for ZX/TS machines.

Enter the first listing, then RUN and input the numbers in the POKE list. Enter lines 20-50 in the final listing over the old lines. SAVE the program on tape, then check the Syntactic Sum.

To play, RUN and avoid the asteroids by moving left and right (with 5 and 8). You get one point for each asteroid you avoid. Start a new game by pressing any key.

Craig Bird, Victoria, BC, Canada

```
   10 REM 12345678901234567890123
45678901234567890123456789012345
67890123456789012345678901234567
89012345678901234567890123456789
01234567890123456789012345678901
23456789012345678901234567890123
45678901234567890123456789012345
67890123456789012345678901234567
89012345678901234567890123456789
01234567890123456789012345678901
23456789012345678901234567890123
45678901234567890123456789012345
67890123456789012345678901234567
89012345678901234556
   20 FOR N=16514 TO 16912
   30 INPUT A
   40 POKE N,A
   50 NEXT N
SYNTACTIC SUM:  17377, 8K ROM

62  15  50  33  64  33   0   4
34  60  64  42  12  64   6   6
35  54  20  16 251  42  12  64
```

```
1    248   2     9     6    32    54   136
35   16   251   42    12    64     1   247
2     9    17    33    0    62    23   237
185   32   12   229    35   114    25   203
128   32    1   119   225    24   240    42
12    64    1     6     0     9    62    38
52   190   32     5    54    28    43    24
247   42   12    64     1   215     2     0
6     0   253    78    33   203   185   203
177   203  169    9   126   254    23   200
54    0    58    38    64   254   223    32
8    58    33    64    61    24    15    24
170   254  247    32     6    58    33    64
60    24    3    58    33    64    50    33
64    42   12    64     1   215     2     9
6     0    79   203   185   203   177   203
169    9    54    38    24    63    42   123
64    35   203   188   203   180   203   172
34   123   64   126   203   191   203   183
203   175  198    67    42    12    64     6
0    79     9    54    23    21    32   222
42    60   64    43   124   181   254     0
32   249   42    60    64    43    43   203
124   32     5    34    60    64    24   159
33     0     0    24   246    42    12    64
35    35   35    35   126   214    27    87
24   180   233    11   241    47   160    24
2   241   176   254     8    56     2   238
143   217  215   217   201   205     2    12
71   197   205    2    12    89   193    81
79   201   205   205    21   218   173    14
14     1   200   14   255   201   253    70
34    14   33   205    24     9   205   155
9   126    18   253    52    58    42    12
64    35    84    93   237   177   195    93
10   139   141    45   127   129    73   117
95    64    66    43    23    31    55    82
69    15   109    43    68    45    90    59
76    69    13    82    90    77    21   106
1    20     2     6     0   129    14     6
222    5   171    13     6     0   181    14
0   220    12     0   216    14     4    20
6   223    6     5   185    13     4     0
46    14     5   207    10     1     0   233
14     5     9    20     5   106    13     0
195    3     3   175    14     3    48     7
6    26     8     0   146    14     3
```

```
   10 REM Y?M5RND5 .6WRNDE£RND▓V7
00( CLS E£RND▒ SAVE ▓40▓7( CLS
 E£RND▒ RUN  )5 Y▓ GOSUB ▓4£ FA
ST 77;ACS LIST E£RND▓ ▓ YAD▓4▓00
F/ RUN E£RND▒NOT ▓▓ CLEAR ?5AC
S ▓ACS ▓ACS ▓UARND RETURN TO 4▓
U5RNDX/?/▓ RETURN RUN 4▓U5RNDW/
U5RNDM5RNDE£RND▒NOT ▓▓ ?ACS ▓AC
S ▓ACS ▓0A/ZE7RND7ACS ▓ACS ▓ACS
▒67RND▓LEN 7E£RND▓ 7▓0▓+4 THEN
EWRNDF7▓ RETURN  4 RAND EWRNDFFA
CS 74▓ 6WRND/▓5 / PLOT E£RND7777
 DIM ▒ LET J▓/▓ LET ▓ RETURN ▓S
 INPUT ▓ OR NOT OR TAN LN ▓£?VAL
LN ▓?AT ??TAN LN LN + AND ▓▒.
COS : COPY TAN CLEAR 76:5LN /▓LN
▓£RND??? GOSUB ▓?▓▓H▓▓???RND
PIF▓3R????F?H?V??#???+?▓=▓▓▓V▓
THEN ▓▓$▓▓▓▓: >=£ ▓▓:▓=▒ TO ▓▓▓
I▓▓INT ▓ DIM ▒▓=▓7▓? ?▓▓▓K▒
▓▓▓▒▓:▓▒01234567890123456789012340
56
   20 SLOW
   30 RAND USR 16514
   40 PAUSE 4E4
   50 GOTO 30
SYNTACTIC SUM:  36541, 8K ROM
```

VISIBELL--8K/1K

This reverses every character
on the screen. Enter the first
program, RUN and input the numbers
in the POKE list. Then enter lines
5-80 in the second listing and RUN.
Lines 20 & 30 reverse the screen;
lines 50 & 60 set back to normal.

```
   1 REM  12345678901234567890123
4
  10 FOR A=16514 TO 16537
  20 INPUT D
  30 POKE A,D
  40 NEXT A
SYNTACTIC SUM:  4099, 8K ROM
```

```
42    12    64   237    75    16    64   126
254   118   40     2   203   254    35   124
144    32   244   125   145    32   240   201
```

```
   1 REM E£RND GOSUB ?(RND▓77▓4
POKE ?▓4 LIST TAN
   5 FAST
  10 PRINT "TEST OF VISIBELL"
  20 POKE 16527,254
  30 RAND USR 16514
  40 PAUSE 60
  50 POKE 16527,190
  60 RAND USR 16514
  70 PAUSE 60
  80 GOTO 10
SYNTACTIC SUM:  11968, 8K ROM
```

COLORSORT--TS2068

These two programs do the same thing: POKE the attribute file with random colors, then sort the bytes, resulting in a display of the sort in progress on the screen.

Try BASIC COLORSORT first so you can see what happens. You can add a line 77 PAUSE 15 to get a better look at the sorting process. This version has a BEEP loop at the end so you'll know when it's done (it takes about 2 hours to RUN).

Now try M/C COLORSORT. You should be truly impressed. It finishes the sort in just a few seconds, PAUSEs, and starts over.

Lloyd Painter, Quackertown, PA

```
   5 REM 84 Line BASIC Colorsort
  10 BRIGHT 0: BORDER 0: INK 6
  15 PAPER 0: CLS
  20 LET a=22527
  25 FOR n=1 TO 768
  30 POKE (a+n),8+8*INT (RND*7)
  35 NEXT n
  40 FOR s=767 TO 1 STEP -1
  45 LET x=0
  50 FOR n=1 TO s
  55 LET c=a+n
  60 IF PEEK c<=PEEK (c+1) THEN
GO TO 80
  65 LET x=PEEK c
  70 POKE c,PEEK (c+1)
  75 POKE (c+1),x
  80 NEXT n
  85 IF x=0 THEN GO TO 95
  90 NEXT s
  95 BEEP .5,26
 100 PAUSE 10
 105 GO TO 95
SYNTACTIC SUM:  19948, TS2068
```

```
   5 REM M/C Colorsort--24 Lines
  10 LET u$="033.000.088.001.255
.002.229.197.030.000.086.035.126
.186.048.006.030.001.043.119.035
.114.011.120.177.032.239.193.011
.225.029.192.024.228"
  15 LET a=50000
  20 FOR n=1 TO 133 STEP 4
  25 POKE a,VAL u$(n TO n+2)
  30 LET a=a+1
  35 NEXT n
  40 BRIGHT 0: BORDER 0: INK 6
  45 PAPER 0: CLS
  50 LET a=22527
  55 FOR n=1 TO 768
  60 POKE (a+n),8+8*INT (RND*7)
  65 NEXT n
  70 PAUSE 150
  75 RANDOMIZE USR 50000
  80 PAUSE 300
  85 CLS
  90 GO TO 50
SYNTACTIC SUM:  23160, TS2068
```

LINES--TS2068

Here's a program that counts on simple math to produce a random display of fans of color. It works by picking two pairs of points on the screen and drawing a series of lines between them. It leaves them on the screen for a while and then quietly picks up after itself.
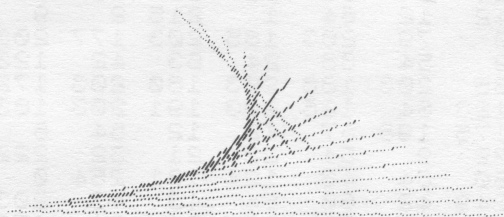

```
  10 LET T=30
  15 LET P=1
  20 DIM E(T)
  30 DIM F(T)
  40 DIM G(T)
  50 DIM H(T)
  60 DIM X(2,2)
  70 DIM Y(2,2)
  80 BORDER 0: PAPER 0: INK 7: O
VER 0
  90 CLS
 100 FOR S=1 TO 2
 110 FOR Q=1 TO 2
 120 LET X(S,Q)=RND*255
 130 LET Y(S,Q)=RND*175
 140 NEXT Q
 150 NEXT S
 160 LET S=T/2
 200 LET TX=(X(1,2)-X(1,1))/S
 210 LET TY=(Y(1,2)-Y(1,1))/S
 220 LET BX=(X(2,2)-X(2,1))/S
 230 LET BY=(Y(2,2)-Y(2,1))/S
 300 LET B=Y(1,1)
 310 LET C=X(2,1)
 320 LET D=Y(2,1)
 330 FOR A=X(1,1) TO X(1,2) STEP
TX
 400 LET E(P)=A
 410 LET F(P)=B
 420 LET G(P)=C-A
 430 LET H(P)=D-B
 440 LET P=P+1
 450 IF P>T THEN LET P=1
 460 PLOT INVERSE 1;E(P),F(P)
 470 DRAW INVERSE 1;G(P),H(P)
 480 PLOT A,B
 490 DRAW C-A,D-B
 500 LET B=B+TY
 510 LET C=C+BX
 520 LET D=D+BY
 530 NEXT A
 540 INK RND*6+1
 600 FOR Q=1 TO 2
 610 LET X(Q,1)=X(Q,2)
 620 LET Y(Q,1)=Y(Q,2)
 630 LET X(Q,2)=RND*255
 640 LET Y(Q,2)=RND*175
 650 NEXT Q
 700 GO TO 200
SYNTACTIC SUM:  44026, TS2068
```

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- The Syntactic Sum (program published in June 81; send SASE for a free copy).
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- What ROM program uses (8K, 2068, Spectrum).
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